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REPORT BY THE U.S.



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General Accounting Office

MSB

Improvements Needed In Army's Determination Of Manpower Requirements For Support And Administrative Functions

Army survey teams determine manpower needs for support and administrative functions. They do not provide the Army with information needed to

- support its manpower budget to the Office of Management and Budget and the Congress,
- allocate authorized manpower spaces to installations and work centers, and
- assess manpower use.

The Army has initiated separate work measurement programs to develop staffing standards to supplement the staffing guide used by survey teams. The standards will provide more precise information than survey teams and the staffing guide, but will not supply top management with the needed information. Moreover, the Army has not integrated its major manpower management activities to use common data.

This report contains recommendations for the Army to design an integrated manpower management system to supply information that all management levels need.



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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

FEDERAL PERSONNEL AND
COMPENSATION DIVISION

B-183257

The Honorable Harold Brown
The Secretary of Defense

Dear Mr. Secretary:

This report discusses problems with the Army's present system of determining manpower needs for Army garrisons, its efforts to supplement the present system with work measurement, and its use of this data to support the budget. We discussed our findings and recommendations with Department of Defense and Army officials and used their comments in preparing this report.

Our recommendations to you are set forth on pages 35 and 36. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs no later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen, House Committee on Government Operations, Senate Committee on Governmental Affairs, and House and Senate Committees on Appropriations; Director, Office of Management and Budget; and the Secretary of the Army.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "H. L. Krieger".

H. L. Krieger
Director

D I G E S T

Army manpower survey teams make onsite appraisals and recommend the number of people needed for support and administrative (garrison) functions for installations under the Forces Command and the Training and Doctrine Command. The survey team recommendations are also the basis for the garrison staffing guide, which is used as criteria for subsequent surveys.

The surveys, although useful for some installation and major command management decisions, are not coordinated with the major manpower activities of planning, programing, and budgeting; of allocating human resources to installations and work centers; and evaluating manpower use. Consequently, the Army supports its garrison budget to the Office of Management and Budget and the Congress by adjusting prior year budgets. Moreover, the Army cannot quantify the effect of not receiving the personnel which survey teams say are needed for garrison work and cannot accurately predict manpower needs for increases in workload due to program changes or mobilization planning.

The Army needs to overcome the following problems to improve its justifications for budget requests.

--Survey teams and staffing standards identify manpower needs in accordance with the organization structure. But (the Army budgets by activity codes, and the staffing standards and staffing recommendations cannot be summarized into budget format.)
(See p. 6.)

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--Survey team recommendations have historically exceeded congressional authorizations. In fiscal year 1978 the shortage was 20 percent. The Army has no method to identify the work related to the 20-percent shortage or to quantify the effect of using other labor sources, such as deployable troops, to do garrison work. (See pp. 8 and 9.)

--Survey teams and work measurement staff make recommendations without regard to the source of labor. But garrison labor is funded by four appropriations and can be managed under about nine different programs. (See pp. 8, 9, and 27.)

Survey team recommendations are based on historical staffing patterns and subjective reviews of local conditions and workload. The work center needs cannot be predicted based on program changes in the budget and do not provide a direct and traceable relationship between manpower needs and workload. (See p. 5 and ch. 3.)

Installation commanders have been given a great deal of flexibility in distributing available resources, organizing activities, and using other labor sources. Such decentralized management contributes to a number of problems GAO identified, including the inability to establish standards for minimum staffing and for the best organizational structure. (See ch. 3.)

Exemplifying the use of supplemental labor, a survey team determined that Fort Sill, Oklahoma, needed 3,583 garrison personnel. Training and Doctrine Command allocated 2,743, and Fort Sill used 1,029 personnel from local sources to make up the shortage and to perform locally determined missions as shown on the following page.

<u>Source of labor</u>	<u>Positions as of November 1977</u>
Overstrength table of distribution and allowances staff	360
Contract	344
Borrowed military manpower	168
Nonappropriated fund	66
Students	8
Volunteers	42
Command staff assigned to Fort Sill	13
Temporary	27
Active duty reservists	<u>1</u>
Total	<u>1,029</u>

The Army reviewed its manpower survey program and decided to supplement it with staffing standards developed by separate work measurement programs.

Developing separate programs for surveys and work measurement will duplicate efforts, fragment manpower authority and responsibility, and provide only some of the information installation and commands need. (See ch. 4.)

(Army headquarters directed that commands develop work measurement standards for total programs or missions (summary level standards). But the Army headquarters has not provided the top level management direction and support nor the procedural guidance necessary on

--selecting the appropriate technique (see pp. 21, 41, and 42),

--how to relate work center requirements to program changes in the budget (see pp. 25 and 42 to 45),

--how to develop standards to compare similar activities (see pp. 25 and 45 to 47),

--the extent methods studies should be conducted to improve and standardize operations before setting standards (see pp. 25, 47, and 48), and

--collecting and using reliable labor and workload data. (See ch. 5.)

The Army has not determined how many staff it needs to implement a work measurement program and provide this support. (See pp. 23 and 24.)

The Forces Command centralized its work measurement program and started developing standards for all its garrison activities. Army headquarters then assigned Forces Command responsibility for setting standards for garrisons at both Forces Command and Training and Doctrine Command installations. The Forces Command's system uses nonengineered standards to obtain quick coverage but does not include (1) a way to relate work center needs to the budget, (2) a plan to make methods studies to improve and standardize operations, or (3) controls on the collection of workload information. (See pp. 24 and 25 and ch. 5, and app. II.)

Fort Sill, Oklahoma, a Training and Doctrine Command installation, has covered 60 percent of its garrison activities with work measurement studies. Its standards were developed as a result of local initiatives and were not based on an overall design to ensure that the standards are cost effective, credible, consistent, and usable for budget and manpower decisions. (See pp. 24 and 25 and ch. 5, and app. II.)

RECOMMENDATIONS TO THE SECRETARY OF DEFENSE

GAO recommends that the Secretary of Defense identify the type of information the Army needs to prepare and support its manpower budget.

The Secretary of Defense should require the Army headquarters to use personnel experienced in budgeting, manpower, workload planning and control, data processing, and work measurement to design a manpower management system with the following characteristics.

- An organization structure that combines the manpower related responsibilities and staffing into one organization at all levels. The organization should centralize manpower control, eliminate duplication, and establish a manpower review function independent of those being reviewed. The staffing standards organization could be located at the commands for developing and updating standards but should be responsive to criteria and procedures directed by Army headquarters.

- A methodology for determining manpower needs based on work measurement where it is feasible and cost effective and uses onsite reviews only to review methods, procedures, and organizational efficiency in connection with the development and validation of staffing standards. The Army headquarters should provide procedural guidance on (1) when to use work measurement or other techniques to establish standards, (2) how to develop garrison-wide standards using similar work units and allowing only legitimate differences for such things as physical layout or mission, (3) when to conduct methods studies considering the need to define and standardize methods and procedures before setting standards, (4) how to summarize work center standards so that manpower requirements can be related to budget elements described in Army management structure codes and be estimated based on changes in programs, and (5) how to collect and validate information for (a) total labor working in the garrison, including costs, (b) available worktime, and (c) workload.

--A management information system which uses a common data base for work center needs, garrison costs, budget requests, allocations, and evaluations of manpower use. The information system should integrate accounting, manpower reporting, and staffing standards information.

--A determination of the spaces needed to implement the system and an allocation of these manpower resources to the program. (See pp. 35 and 36.)

Army officials generally agreed that the report accurately addresses the problem areas and offers viable alternatives.

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ABBREVIATIONS

DOD	Department of Defense
FORSCOM	Forces Command
TDAs	tables of distribution and allowances
TRADOC	Training and Doctrine Command

CHAPTER 1

INTRODUCTION

Increased personnel costs and competition for funds have increased the need for the Department of Defense (DOD) to have personnel requirements determined on as credible and supportable a basis as practical. The Congress needs assurance that the personnel budget is based on techniques that are reliable and useful in the budget process. Also the Army needs to be able to quantify its support manpower needs in relation to workload in the event mobilization is required in a crisis situation. The capability to conduct full mobilization is dependent, among other things, on timely expansion of the training and support base to meet increased requirements.

Staffing standards based on work measurement 1/ that include industrial engineering and statistical techniques can provide this type of information. We reported this to DOD in October 1977 2/ and recommended that the Secretary of Defense require the services to use these techniques to establish staffing standards.

Information based on work measurement can provide timely and accurate data in a format easily used by managers at all levels. Appropriately summarized work measurement data is very useful at intermediate and top management levels for evaluating performance and determining resource requirements. Its use in formulating budgets provides for accurate and realistic projections of work force and dollar needs.

1/ Work measurement is the term generally used to describe the body of knowledge and techniques used to design job activities so they require a minimum amount of resources and, when appropriate, establish labor standards which are useful to management in forecasting staff requirements, formulating budget estimates, measuring and controlling efficiency and performance, and comparing actual accomplishments with expected accomplishments.

2/ "Development and Use of Military Services' Staffing Standards: More Direction, Emphasis, and Consistency Needed" (FPCD-77-72, Oct. 18, 1977).

The use of work measurement information can lead to increased productivity. Even a small increase in efficiency has potential for major cost savings. Personnel positions can be saved or better used by applying staffing standards based on work measurement. In addition, the personnel positions saved can be eliminated from total requirements or reallocated to other functions or installations having valid deferred requirements. The Air Force, as a result of its management engineering program over a period of 15 years, has reported cumulative savings of \$894 million. In fiscal year 1974 the services reported savings of \$121 million associated with work measurement.

Our 1977 report noted that the Department of the Army had made little progress in developing and using staffing standards in determining requirements for support staff. The Army agreed that the use of staffing standards should be increased. It believed it should continue its system of manpower survey teams and staffing guides to determine manpower needs for support activities but had directed its activities to use work measurement techniques to supplement the existing program.

The Army manages its personnel under tables of organization and equipment and tables of distribution and allowances (TDAs). Tables of organization and equipment are documents which prescribe the normal mission and organizational structure for prototype military units and list personnel and equipment requirements. The Army develops modification tables of organization and equipment which adapt the prototype organization and personnel and equipment requirements to particular combat operational needs of specific units in the field. Our report 1/ on needs of these units was issued in September 1978.

For noncombat units, TDAs provide the organizational structure, personnel, equipment requirements, and authorizations for specific units. This report covers the determination of manpower requirements for the TDA units which provide support and administrative services to installations and are referred to as garrison units.

The following chart shows the number of congressionally authorized military and civilian personnel which Forces Command (FORSCOM) and Training and Doctrine Command (TRADOC)

1/"Continuous Management Attention Needed for the Army to Improve Combat Unit Personnel Requirements" (FPCD-78-61, Sept. 5, 1978).

allocated to installations for garrison activities in fiscal year 1978. These numbers are about 20 percent below those determined necessary by onsite manpower surveys and do not include several sources of labor used to make up the 20-percent shortage.

	<u>Allocations</u>		
	<u>FORSCOM</u>	<u>TRADOC</u>	<u>Total</u>
Military	9,448	11,660	21,108
Civilian	<u>28,521</u>	<u>21,625</u>	<u>50,146</u>
Total	<u>37,969</u>	<u>33,285</u>	<u>71,254</u>

ORGANIZATION FOR MANPOWER MANAGEMENT

The Army operates under various organizational alignments to manage manpower. The following chart shows the functions we reviewed and the responsible organizations:

<u>Activity</u>	<u>Army headquarters</u>	<u>FORSCOM</u>	<u>TRADOC</u>
Manpower budget and allocations	Deputy Chief of Staff--Operations	Deputy Chief of Staff--Personnel	Deputy Chief of Staff--Resource Management
Total budget	Comptroller of the Army	Deputy Chief of Staff--Comptroller	Deputy Chief of Staff--Resource Management
Work measurement	Comptroller of the Army	Deputy Chief of Staff--Comptroller	Deputy Chief of Staff--Resource Management
Staffing guides	Deputy Chief of Staff--Personnel	Deputy Chief of Staff--Personnel	Deputy Chief of Staff--Resource Management
Manpower requirements by survey team	Deputy Chief of Staff--Personnel	Deputy Chief of Staff--Personnel	Deputy Chief of Staff--Resource Management

Army headquarters has consolidated its manpower functions under the Deputy Chief of Staff for Personnel. The responsibility for work measurement was divided between the Comptroller of the Army and the Deputy Chief of Staff for Personnel. The Comptroller is responsible for the programs and the Deputy Chief of Staff for Personnel is responsible for manpower-related policy.

SCOPE OF REVIEW

We examined the Army's problems with the current procedures for determining manpower requirements for garrisons. We also reviewed the Army's direction and emphasis on developing staffing standards to determine if planned and ongoing efforts are adequate. We did our work at

--Fort Sill, Oklahoma;

--Headquarters, U.S. Army TRADOC, Fort Monroe, Virginia;

--Headquarters, U.S. Army FORSCOM, Atlanta, Georgia;
and

--Headquarters, Department of the Army, Washington, D.C.

We chose Fort Sill because Army officials said that it had the most advanced work measurement program of any TRADOC installation and that a survey team had recently made an onsite manpower survey. We chose FORSCOM because it is responsible for the garrison staffing guide and is developing a staffing standards program at command level.

We examined pertinent DOD and Army directives, regulations, and records and reviewed Air Force regulations on work measurement techniques. We interviewed manpower management officials and personnel involved in developing standards at many echelons.

CHAPTER 2

NEED TO COORDINATE MANPOWER MANAGEMENT ACTIVITIES

The Army's manpower management processes do not provide sufficient data to support garrison requirements to the Congress, assess the impact of staff shortages, make the best allocation of resources, and monitor the use of human resources. Such management entails four major activities which are not coordinated.

- Determining manpower requirements of work centers.
- Planning, programing, and budgeting.
- Allocating manpower spaces.
- Assessing manpower use.

FORSCOM and TRADOC are responsible for (1) determining the minimum manpower requirements for garrisons, (2) providing input to the budget cycle seven times each year, (3) allocating approved manpower spaces to the installations, and (4) monitoring their installations' use of manpower. All these activities seek the minimum essential number of military and civilian personnel to effectively do required functions. Yet the activities are not part of a system with common data bases. Furthermore, the Army's system does not provide a method for quantifying garrison needs based on budget changes or mobilization planning.

WORK CENTER REQUIREMENTS NOT COMPATIBLE WITH BUDGET AND ALLOCATIONS

FORSCOM and TRADOC survey teams are required to review garrison manpower needs every 2 to 4 years. The survey teams determine how many personnel each work center needs to accomplish its mission based generally on historical staffing patterns, review of local conditions, workload, and judgment. Then they summarize their recommendations for work centers to determine how many personnel the installation needs to operate its garrison. The survey team recommendations become garrison requirements when documented in the TDA.

The commands cannot use the survey team recommendations for budgeting because

- manpower surveys are not integrated with the budget codes,

--survey team recommendations exceed personnel spaces authorized by the Congress, and

--garrison staff are funded by several appropriations.

Since there is only an indirect relationship between the congressionally authorized spaces and survey team recommendations, the command's manpower staff must allocate authorized spaces in bulk, and the command's Comptroller matches funding from the various appropriations.

Manpower surveys and budget process not integrated

The Army's manpower survey program is not designed to provide input to the budget. Survey teams determine garrison needs by organizational element, but the Army budgets by activity. The survey team recommendations cannot be summarized into the activity used for budgeting.

Manpower requirements reveal what the manning of an organization should be. Army regulations state that requirements data provide the base for planning, programing, and allocation of resources. Army officials told us, however, that requirements determined by manpower survey teams were not designed to support the budget.

The survey teams determine manpower requirements according to the organization structure provided in staffing guides. The organization structure generally divides directorates into divisions, divisions into branches, and branches into work centers. Each work center does tasks to accomplish an output that relates with the entire work center. The survey team makes an evaluation to determine how many staff, regardless of source or availability, are required to accomplish assigned missions of each work center.

The budget is based on the activities described in Army management structure codes. FORSCOM budget analysts consider prior year charges to these accounts in preparing the budget, but they cannot readily relate the actual charges to recommendations of the survey team.

The Army management structure codes for base operations are subdivided into cost accounts and further by element of expense. For example, the cost account maintenance of materiel can be subdivided as follows:

Maintenance of materiel	C 0000
Support maintenance	C 1000
Aircraft	C 1A00
Fixed wing	C 1A10

Installations must designate the cost account to which staff will charge their time, but staffing guides used by survey teams do not provide guidance to correlate the organizational elements to the cost accounts.

Accounts maintained by Army management structure code can represent labor charges from numerous work centers. In FORSCOM the subaccount "other administration" can be used by supervisors and other administrative staff from numerous work centers. About 25 to 30 percent of garrison costs are identified in this account, according to a FORSCOM staff study. The study states that the use of these codes is further confused because one or more codes are changed annually. These changes show a general trend to identify an increasing number of administrative, supervisory, and personnel in the functional account "other administration." The survey team recommendations include these personnel under each organizational element.

The accounts used at the budget level by commands can include costs from work centers in several directorates. For example, both the Commanding General and some of the Adjutant General's staff at FORSCOM charge costs to the same activity. An Army official said that they can determine which staff are assigned to the functional areas represented by the Army management structure codes and that the Army Authorization Documents System provides a way to relate survey team recommendations and actual manpower spaces to the codes. This documentation, however, is completed for actual staff after the installations decide where they will assign manpower spaces received through the budget process.

A 1976 Army staff study of the manpower management program recommended that funding and manpower be identified by the same activity codes.

Survey recommendations not used in budgeting

The Army budgets for garrison staff by adjusting prior year authorizations. These adjustments cannot be directly related to survey team recommendations. Army headquarters considers personnel ceilings and changes in Army missions and programs and adjusts prior congressional authorizations to provide major commands guidance for budget requests. FORSCOM officials must provide their budget input based on

headquarters guidance rather than work center requirements so that requests and authorizations correlate.

The Congress has historically authorized fewer personnel for the garrison than the requirements determined necessary by onsite surveys. Army headquarters then allocates fewer personnel to the garrisons. Following is a comparison of manpower resources recommended by survey teams and allocated for the garrisons at FORSCOM's installations as of March 1978 and at the Fort Sill garrison as of November 1977.

	<u>Work center requirements</u>	<u>Allocated resources</u>	<u>Percent</u>
FORSCOM garrisons	48,820	37,969	78
Fort Sill garrison	3,395	2,743	81

The requirements are those the survey team recommended as permanent garrison staff and do not include other labor the survey team recommended, such as contract labor and borrowed military manpower. A survey team recommended that Fort Sill use 188 personnel from local sources for a total requirement of 3,583 spaces. But installations use other labor more than that recommended by the survey team to fill the gap between requirements and allocations and to accomplish locally authorized missions. As shown below, as of November 1977, Fort Sill had supplemented both the allocated staff and other labor sources recommended by the survey team, for a total garrison labor force which exceeded total survey team recommendations.

	<u>Civilians</u>	<u>Military</u>	<u>Other</u>	<u>Total</u>
Survey team recommendations	2,676	719	188	3,583
Allocations	2,119	624	-	2,743
Total labor force	2,210	893	669	3,772

The source and management of the labor in excess of allocations are discussed in chapter 5.

Survey team recommendations cannot be related to appropriations

Permanent garrison staff are primarily funded by Army operations and maintenance appropriations, the family housing

appropriation, and the military personnel appropriation. In addition, the installations can use about nine labor sources other than permanent staff to do much garrison work. But survey teams make recommendations without regard to the source or availability of labor. Major commands do not know what parts of the survey teams' recommendations relate to the labor funded by each appropriation until after installations identify actual manpower spaces with Army management structure codes.

EFFECT OF STAFF SHORTAGES
CANNOT BE ASSESSED

FORSCOM allocates proportionately fewer manpower spaces to installations with the most deployable troops, because such troops can be borrowed to do some garrison work. In fiscal year 1978 FORSCOM allocated manpower spaces which ranged from 92 percent of requirements for small installations to about 67 percent for corps-size installations, such as Fort Bragg, North Carolina, and Fort Hood, Texas. The Army system does not provide a method of assessing the effect of not getting the number of people recommended by the survey team.

FORSCOM officials said the shortage between requirements and allocations impairs the command's ability to accomplish its mission. But they were unable to quantify the effect of not getting the personnel that survey teams said was needed.

In a 1977 report to Army headquarters, FORSCOM discussed a shortage of 8,061 authorizations below requirements and described the following effects.

- Reductions can no longer be achieved through attrition.
- The shortage is being made up with combat troops lacking functional skills to properly conduct support activities, and use of these troops in support activities can severely degrade unit training.
- Maintenance backlogs will increase with resultant readiness implications in the equipment availability area.
- Drastic reduction or elimination of base service functions will have to be made.

FORSCOM officials said that, because of shortages of the 8,061 civilian spaces, they would have to increase

borrowed military manpower or contract services. FORSCOM could not identify or quantify (1) maintenance backlogs, (2) the workload not done because of labor shortages, nor (3) the workload performed by the other sources of labor, such as deployable troops.

As discussed on pages 29 and 30, military personnel borrowed from deployable units currently provide much of the mission-related base support. Upon mobilization, these units would deploy at the same time the support workload at all installations would drastically increase. Increases in the use of borrowed military manpower amplify the need for the Army to be able to quantify garrison manpower needs in relation to workload so that mobilization needs can be anticipated. We are currently studying the Army's capability to handle the influx of personnel upon mobilization in an emergency.

SURVEYS DO NOT SUFFICIENTLY MONITOR MANPOWER USE

Manpower surveys do not provide management with sufficient data to monitor and adjust manpower allocations between onsite surveys for such things as changes in programs or workload because the survey teams review each site only every 2 to 4 years.

The Army allows installations to submit requests for interim changes to requirements as determined by survey teams. FORSCOM approves or denies each request based on the installation's description of current workload compared with that described in the manpower survey report. FORSCOM approved 69 changes to Fort Meade's requirements between surveys. FORSCOM staff said they no longer have any perspective on Fort Meade's manpower after so many changes.

OTHER STUDIES

The Army process of modifying last year's budget to support the current and future year's request is typical of many Government agencies. Most Government agencies surveyed in 1973 by the Army Management Engineering Training Activity 1/ believed the use of requirements based on standards

1/"Improving Work Measurement Systems in the Federal Government," prepared for the Joint Office of Management and Budget, General Accounting Office, Civil Service Commission Productivity Steering Committee by the United States Army Management Engineering Training Activity, June 1973.

at lower organization levels was a waste of time. Their rationale was that both funds and manpower requested are often substantially greater than those appropriated. The report points out, however, that organizations have been successful in using high level work measurement standards and staffing ratios together with workload forecasts at the same level to support plans and budgets. The Army's efforts to develop standards at these levels are discussed in chapter 4.

CONCLUSIONS

The success of good manpower management depends on accurate and supportable data. We believe the Army needs to integrate its manpower management activities into a system with a common data base. Thus the same system could provide information to all levels of management and serve to justify, allocate, and evaluate manpower. (The Army needs a system which would permit reconciliation of manpower requirements from the work center to the budget level and allocation of manpower spaces from the Army headquarters to the work center.) This would help management justify needs, quantify the effect of shortages, and assess utilization.

CHAPTER 3

MANPOWER SURVEYS DO NOT PROVIDE

OBJECTIVE AND VERIFIABLE REQUIREMENTS

Survey team recommendations do not provide needed data for manpower management and budget purposes because the recommendations do not generally directly relate manpower needs to specific amounts of work. Furthermore, the survey teams rely heavily on historical staffing patterns and subjective review of locally developed information. For criteria the survey teams use a garrison staffing guide which documents what previous survey teams have recommended. In using the guide, the survey teams must adjust for factors such as local operating conditions and variance in missions.

An Army team reviewed the manpower survey program and reported its findings in December 1976. The report identified several procedural weaknesses, but the team's recommendation was to continue the manpower survey program and supplement the staffing guide with work measurement standards.

We identified weaknesses in the development of the staffing guide and manpower surveys, which indicate the system cannot provide supportable requirements for budgeting or a feedback system for monitoring efficiency and identifying needed changes in the allocation of manpower spaces.

PROBLEMS WITH STAFFING GUIDES

Installations perform activities differently because their missions vary and the Army allows installations to organize their functions differently. FORSCOM, which prepares and updates the guide, cannot develop organization and staffing guidance, which accounts for all the variations. FORSCOM develops and updates the garrison staffing guide based on survey reports of FORSCOM's manpower surveys and limited quantitative information from TRADOC surveys. The guide brings together the following types of guidance into a single document:

- Organizational guidance.
- Quantitative standards or yardsticks (number of people required).
- Qualitative guidance (kinds of people required).

Army guidelines state that the tables in the staffing guide indicate staffing normally required to perform a function, but they neither prescribe nor authorize a number of workers. Installations use the guide to request people, and survey teams use it to confirm the number of people needed.

Civilian personnel offices and force management groups monitor and approve the kind of people (quality) used in garrisons.

The staffing guide is not authoritative on organizational guidance

The staffing guide contains organization charts showing what FORSCOM believes to be the most efficient organizational structure on how work centers should be organized under branches and branches under divisions. The guide also contains tables which describe work typically performed by work centers. However, the organizations' actual structure and the work they perform often vary from those described in the staffing tables. Staffing tables provide no systematic method to adjust for variances. Therefore, the survey team must adjust its estimate of the number of people needed through some subjective process.

The Army allows installations to organize major elements, such as Directorate of Industrial Operations, in the manner they believe is most effective. The Army also allows each lower level of management to utilize staff the way it believes is most effective. Thus managers use allocated staff and other labor sources, such as borrowed military manpower, to accomplish missions in a variety of ways. This prevents FORSCOM from developing guidance on organizational alignments and manpower requirements, which are universally useful to Army installations.

We randomly selected 30 work centers at Fort Sill, a TRADOC installation, and found 4 were not organized in accordance with the staffing tables. Twelve of the work centers performed more work than described in the garrison staffing guide. Fort Riley, Kansas, a FORSCOM installation, had similar differences. (See app. I for details.)

Staffing guide does not provide objective and verifiable quantitative guidance

The quantitative guidance, or yardsticks, in the staffing tables generally identify needs based on levels of workload or other quantifiable factors, such as population

served or number of buildings. But yardsticks are only an average of past staffing practices. FORSCOM updates and publishes staffing tables without knowing whether the quantitative standards directly relate to the description of work typically performed.

The most common type of yardstick shows manpower needs in relation to work units, as follows:

Invoices processed	750	1,500	3,000	5,400
Manpower requirements	3	5	7	9

The quantitative guidance is supposed to be based on the activities defined in the description of work so that, when surveys identify differences between the tables and installation activities, the staffing can be adjusted. But in updating the staffing tables, FORSCOM does not directly relate the quantitative guidance to the work performed statements. To update the yardstick, FORSCOM averages the requirements awarded by FORSCOM and TRADOC survey teams. In some cases 3 or 4 past surveys are used and in other cases 20 or more are used. But past surveys do not generally relate staffing to specific amounts of work.

Army guidelines state that work units should be selected for yardsticks, which have the highest correlation between the amount of work done and the number of personnel required for the activity. But many times the yardsticks do not show a direct relation between the workload and manpower. Our sample at Fort Sill showed that only 10 percent of the work units used in the staffing guide represented a significant correlation between the man-hours required to do the work and the output produced by the work centers. (See pp. 38 and 39 of app. I for further discussion.)

Currency of guides

An Army team reported ^{1/} in 1976 that staffing guide tables are outdated for many functions. Tables in the garrison guide are to be updated on a 3-year basis. We noted that many tables for work centers were at least 6 years old. Staff responsible for updating the tables said that they were current for all organizational elements except those in the transportation and maintenance divisions.

^{1/}"Army Manpower Management Survey Program Study," Dec. 10, 1976.

MANPOWER SURVEY FINDINGS RELY ON JUDGMENT

Manpower survey teams make onsite appraisals of manpower needs to identify inefficiencies and provide information for allocating staff resources. But the determinations are based largely on judgment and do not provide a direct and traceable relationship between manpower and output.

Army findings

The 1976 Army study found that manpower surveys identify inefficiencies, solve many problems, and save manpower which can be applied to other missions. The study also identified weaknesses, including

- difficulty in validating missions and functions,
- need for command emphasis,
- need to followup survey findings, and
- need to reduce the length of time to conduct a survey.

In spite of the weaknesses, the Army concluded manpower surveys were an effective system for determining and validating manpower requirements and recommended the system be continued. The study did not address the problem of relating manpower requirements to workload in a direct and traceable manner.

Bases for survey team recommendations

For the 30 work centers we randomly selected at Fort Sill, a survey team, in March 1978, recommended staffing on the following bases.

<u>Bases</u>	<u>Work centers</u>	<u>Recommended staff</u>
Yardstick	7	17
Yardstick adjusted for local factors	13	139
Past performance	3	19
Local appraisal	7	173
Work measurement standards	<u>0</u>	<u>0</u>
Total	<u>30</u>	<u>348</u>

Appendix I shows that, even though the survey team cited the above bases for recommending staff, most of its

recommendations included varying degrees of subjective evaluation which precluded relating workload to man-hours. Thus the Army cannot use the survey team recommendations to determine needs based on changes in workload or to assess the effect of staff shortages. (See pp. 39 and 40.)

CONCLUSIONS

We believe the onsite manpower survey teams have provided some useful information for installations and commands. But these recommendations have not provided the timely objective and verifiable information upper level management needs for planning and budgeting nor adequate information local management needs for use of its manpower allocations.

We believe the judgments required for local operating conditions, the staffing tables based on historical staffing patterns, the inability to relate work center requirements to predictable program elements, and the Army's decentralized management philosophy all contribute to the lack of good staffing guidelines and supportable manpower requirements.

CHAPTER 4

NEED TO REVISE APPROACH

TO DEVELOPMENT OF STAFFING STANDARDS

The Army recognizes its need for garrison staffing standards which its top level manpower managers can use to support budget estimates and assess the impact program changes should have on allocations to installations. For at least 4 years, Army regulations have directed commands to develop such standards. But top level Army manpower management officials have provided insufficient guidance and support for the effort.

Standards are being developed at FORSCOM and Fort Sill, Oklahoma, for use in assessing the needs of individual work centers. FORSCOM officials estimated that, at the present level of effort, about 4 years will be required to cover the installations' work centers with nonengineered standards. Many of these standards do not appear susceptible to summarization in a way that can be related to program level changes. Their usefulness is also impaired because the Army has not consistently identified all sources of labor employed at the work center and has not established quality controls for data collection and validation.

PAST EFFORTS TO DEVELOP STANDARDS HAVE NOT BEEN SUCCESSFUL

Past work measurement efforts have been of little benefit to Army management and supervisors. The efforts generally did not provide standards for total work produced. Instead, the work was fragmented in a manner difficult to summarize, and standards could not be used by top management to manage manpower and justify manpower needs in the budget.

Standards developed from 1965 through 1975, as part of the Defense Integrated Management Engineering System, comprised the first coordinated DOD-wide program to use work measurement to improve the use of manpower resources. The objectives of the program were to:

- Improve labor productivity by applying industrial engineering principles and techniques.
- Provide a common base of work measurement and productivity data. DOD wanted the data to be used to develop budget estimates and staffing requirements

for work planning and control, to develop productivity performance indexes, and for other management purposes.

The program did not meet its goal as a management tool in the Army because it was a permissive program at all levels. Officials at FORSCOM said the lack of direction, control, and emphasis was one reason the program failed. Because installations were not required to develop and use standards, an extremely fragmented approach resulted. Also installations developed "operation" standards--standards developed for each job or operation--which were too detailed for developing summary level standards.

The 1976 Army report 1/ on its manpower survey program found that existing standards consisted of detailed standards relating to a specific work unit and were not representative of a functional area.

We reported 2/ that DOD guidance and instructions were inadequate to properly implement a work measurement program. We said that the lack of DOD direction of the development and use of staffing standards resulted in limited progress in using work measurement standards for determining requirements.

DOD contracted in 1976 for a work force management study to provide a policy level assessment of the services' methods of determining staffing requirements. DOD plans to use the results of this study to write policy guidance on the use of work measurement, but it plans additional study before helping services design a system.

TOP MANAGEMENT DIRECTION,
CONTROL, AND SUPPORT NEEDED

The Army headquarters directed major commands to develop work measurement standards for total programs or

1/Op. cit., p. 14.

2/"Development and Use of Military Services' Staffing Standards--More Direction, Emphasis, and Consistency Needed" (FPCD-77-72, Oct. 18, 1977).

"Improvements Needed in Defense's Efforts to Use Work Measurement" (LCD-76-401, Aug. 31, 1976).

"Major Cost Savings Can Be Achieved by Increasing Productivity in Real Property Management" (LCD-76-320, Aug. 19, 1976).

missions (summary level standards). But the headquarters has provided limited guidance on how to develop the standards and has not set up a system to use manpower requirements based on work measurement in the budget. As a result FORSCOM and TRADOC have not developed summary level standards which can provide a traceable relationship between work center needs and the budget.

Work measurement can be applied to most functions, whether it be direct labor producing a product or indirect labor providing overhead and administration. Although indirect labor is more difficult to measure, practical and beneficial measurement results can be achieved. For any type activity, standards must be related to a mission or program element which can be predicted before the standards are useful for top level manpower planning and budgeting.

Garrison activities sometimes can be identified to a piece of equipment, but more often garrison activities support and service the installation and its population. Appendix II outlines one way for relating manpower needs to program plans when activities can be identified to a product, such as maintaining equipment. It also outlines a method used by the Air Force when activities are identified with services.

Headquarters staffing is insufficient

A 1973 study of work measurement systems in the Federal Government by the Army Management Engineering Training Activity showed that a successful work measurement system is highly dependent on getting key managers and staff specialists at the headquarters level involved. The training agency reported that a systems design must be developed by top management and include personnel experienced in budgeting, manpower, workload planning and control, data processing, and work measurement. A headquarters organization should establish policy and procedural guidance, develop top level work units for the agency, and monitor the way work units are selected at the lowest levels.

Army headquarters has assigned one person to work measurement. The person is on the Army's Comptroller's staff and has been responsible for work measurement as it relates to productivity and to manpower requirements. The Deputy Chief of Staff for Personnel now has responsibility for work measurement policy as it relates to manpower but has assigned no staff to the activity. Army headquarters officials said they were limited to policy direction and did not have authority or enough staff to write procedural guidance. The headquarters staff supports the work measurement programs

but has not sufficiently monitored command and installation efforts to identify all of the problems we noted in our review.

Need for procedural guidance

Army headquarters has not provided the procedural guidance necessary to ascertain that work center standards based on work measurement are consistent between locations and meet minimum specified characteristics. Work measurement represents a sizable investment, but the Army has not determined its cost and benefits.

The Army headquarters guidance has consisted of Army Regulation 5-4, "Department of Army Productivity Improvement Program," and of several Comptroller letters and memorandums. Army Comptroller officials said they had provided other guidance during meetings with FORSCOM work measurement staff.

Army Regulation 5-4 provides for an Army-wide program of performance standards for performance evaluation, work planning and control, manpower determination, and budget preparation. The regulation directs that major commands develop staffing standards based on work measurement and assigns to commanders the responsibility for implementing the program.

The Comptroller has provided the following additional instructions:

- In 1975 the Comptroller directed that performance standards be developed for determining budget and manpower requirements.
- In 1977 the Comptroller directed Army commands/agencies to prepare a plan for developing standards.
- In 1978 the Comptroller directed that full development and implementation of summary-level standards proceed and assigned to the commands the responsibility for developing standards in certain functional areas. FORSCOM was assigned the responsibility for garrison functions.

Army headquarters has not provided procedural guidance on the following characteristics of a good work measurement program.

- Staff-hour data should be collected through accepted industrial engineering work measurement techniques.

- Standards should describe the scope of the function down to and including the task level so that standards can be applied to all similar functions.
- Workload data should be identified and defined and quality controls should be established to assure validity.
- The time employees will be off the job must be accurately estimated to make sure enough employees are available to accomplish the work.

Selection of techniques

Work measurement success depends on judicious selection of an appropriate technique. The Army, however, allows each installation or command to determine the basis for technique selection.

Staff-hour data can be collected through several acceptable techniques, which can be broadly divided into two categories--engineered and nonengineered. Both engineered and nonengineered standards have advantages and disadvantages, and some types of standards can best be applied to certain types of operations.

Engineered standards describe the time it should take for a task or operation based on actual measurement or observation of the time it takes to do individual tasks. Engineered standards can provide close management control over high-volume operations but can be time consuming and costly. Techniques used to develop engineered standards include work sampling.

Nonengineered standards are also an expression of the time to perform a task or operation. Techniques used to develop nonengineered standards are less precise and often relate to the time it "did take" to perform a task or operation. One such technique commonly used by the Army is statistical analysis of historical performance. This relates the work units produced to the man-hours used to produce the units over a historical period. Planners can inadvertently prolong inefficient operations with nonengineered standards because past performance is usually accepted as satisfactory. However, nonengineered standards generally cost less and take considerably less time to develop than engineered standards.

Each technique has characteristics appropriate for specific types of operations. Work samples are best used for irregular work where a work unit is highly correlated

to man-hours input. Statistical techniques are also used for irregular work where a work unit can be determined, but they are much quicker than work samples. On the other hand, a staffing ratio can best be applied where no work unit can be identified, such as in administrative and support activities.

Reliability of standards

Manpower requirements based on work measurement standards are no more valid than the man-hour and workload data on which the standard was developed and the projected workload and available time used to compute requirements. But the Army has not provided procedural guidance to ascertain that the input data is valid within acceptable limits. (The problems we noted on these data sources are discussed in ch. 5.)

Work measurement for the garrison must take into account factors not normally encountered by work measurement staffs. For example, many labor sources, such as contract labor and borrowed military manpower, produce the work units or outputs of work centers. Since a standard represents the total time necessary to produce a work unit or total output of a work center, all labor sources should be measured. The standard multiplied times workload gives the required labor hours which should include the various labor sources managed and funded under separate programs. If all sources of labor are not included, the standards will not be comparable between installations since the use of such labor sources as contract and borrowed military manpower varies. The Army excludes some of these sources, such as contract, from its required labor hours.

Need for staffing standards organization and support

Army headquarters has not controlled the organizational placement of work measurement programs, determined how many people it needs to develop staffing standards, and made sure that automatic data processing support is adequate.

Staffing standards organization

TRADOC's work measurement programs are located at installations. However, due to lack of command and headquarters emphasis, most installations have little or no work measurement efforts underway. TRADOC has centralized control for the manpower survey program and work measurement under the Deputy Chief of Staff for Resource Management. Responsible

officials have done little, however, to develop a work measurement program because they have no overall procedural guidance on how to set up a work measurement program which is integrated with other manpower programs. The officials believe it would be impossible to adequately staff such a program considering the annual reductions in civilian manpower.

FORSCOM has centralized its work measurement program at the command level. The activity is, however, under the Deputy Chief of Staff--Comptroller, and its usefulness to manpower relies on the coordination of parallel organizations.

Staffing support

The Army does not know how many work measurement personnel it needs to develop staffing standards. Organizations which have been developing staffing standards have had severe manpower reductions. Fort Sill and FORSCOM officials told us that the number of remaining work measurement technicians is insufficient to develop quality work measurement standards and to ensure accurate input data.

Fort Sill had not prepared any analysis of the number of work measurement staff needed. FORSCOM estimated it needed 49 personnel but said this estimate was based partially on availability. In contrast, the Air Force has a similar program (Management Engineering) which, in 1976, had about 2,500 spaces involved in manpower requirements and allocations. Each installation has a management engineering team which develops standards and submits them to the Air Force headquarters for approval.

The Army headquarters, in September 1977, issued policy guidance to help prevent installation commanders from making further cuts in work measurement staffs. The guidance instructed Army installations to maintain an effective level of support to comply with current regulations governing work measurement. Yet, even as Fort Sill and FORSCOM were moving ahead of others in developing staffing standards for the garrison, they were losing trained personnel. For example, from October 1977 to March 1978, FORSCOM cut its work measurement staff of 79 by 16 as part of a civilian manpower reduction. By April 1978, 6 of 22 FORSCOM installations had eliminated all their work measurement personnel. TRADOC has also substantially reduced its work measurement staff. For example, in fiscal year 1977, only 9 of 17 TRADOC installations had work measurement personnel. Fort Sill's work measurement staff of 14 persons was the largest on a

TRADOC installation. Subsequent to the Army instruction, Fort Sill eliminated two more spaces from its work measurement program.

Data processing support

A work measurement system has its own unique accounting requirements as well as a need to automatically process large volumes of data. Also it is important to integrate the accounting requirements for a work measurement system with those of other systems.

Both FORSCOM and Fort Sill officials said that they needed automatic data processing support to adequately gather and analyze workload and man-hour data. But such support is minimal or not available. FORSCOM is using some automatic data processing support to record data, but the records are not integrated with existing accounting and manpower reports.

CURRENT DEVELOPMENT EFFORTS ARE INADEQUATE

FORSCOM briefed Army headquarters in May 1978 on its progress in designing a work measurement program to develop staffing standards for garrisons. Subsequently, Army headquarters assigned FORSCOM the responsibility to develop summary level standards for garrisons. Army headquarters made this assignment without telling FORSCOM what technique to use or how to develop summary level standards and integrate them into the budget and manpower systems.

The Army Management Engineering Training Activity provided a technical review of FORSCOM's program. The agency did not, however, help design FORSCOM's system to preclude the same pitfalls it noted in other agencies in its 1973 study.

In 1976 Fort Sill started developing standards to use for manpower management because of the efforts of the Fort Sill Director of Resource Management. The Army Management Engineering Training Activity conducts a 6-week training course which is a prerequisite for Army work measurement staff. The Fort Sill work measurement staff attempted to follow the training agency's textbook criteria for developing work measurement standards, but it has no plan to fit the standards into the budget and manpower systems.

Fort Sill is developing the standards in hopes of getting manpower managers to use them. The Director of Resource Management said the installation needed better

information to distribute resources and civilian cuts. However, Fort Sill has used the standards only for approving the use of borrowed military manpower and for generating feedback reports to work center managers on efficiency. The Fort Sill Chief of Staff said he considered work measurement an important source of information, but, until it is integrated into the budget and manpower systems, he could not justify his budget on the basis of the standards. He also hopes to use these staffing standards as a basis for allocating staff when such standards are developed for the entire Fort Sill garrison.

Appendix II discusses the following problems we noted with the Army's current development efforts to cover garrison activities with work measurement standards.

- TRADOC installations and FORSCOM have selected different work measurement techniques for the same type of activity based only on local analysis of which technique is best or most cost effective. (See pp. 41 and 42.)
- FORSCOM and Fort Sill have not summarized their staffing standards to relate to programs in the budget. (See pp. 42 to 45.)
- The Army's approaches to developing work measurement standards will result in a different standard for the same type of function at every garrison. (See pp. 45 to 47.)
- Inefficiencies and differences in operations can be identified through a method study performed by the work measurement staff, but FORSCOM does not plan to perform any methods studies until all garrison activities are covered by statistical standards in about 4 or 5 years. (See pp. 47 and 48.)

CONCLUSIONS

Fort Sill and FORSCOM efforts to develop staffing standards based on work measurement will, in our opinion, provide some valuable information for installation and major command management decisions. We believe the standards can help in assessing efficiency at the work center level and provide installation management with better information for allocating manpower resources to work centers.

The Army's efforts to develop staffing standards will not, in our opinion, meet the informational needs of higher

level management. For example, manpower needs determined at each work center will not be integrated into the manpower and budget systems nor be predictable at the program or budget level. Moreover, limited efforts to summarize standards did not consider differences between the organizational structures and budget functions. The information can be used only for local level decisions or to supplement survey team recommendations.

We believe FORSCOM's systems approach is a step in the right direction, but, without Army headquarters guidance and support, the efforts will lead to a piecemeal, evolutionary approach which will not meet the potential of work measurement. The problems we found in the Army are little different from what the Army Management Engineering Training Activity found in other agencies in 1973. That is, the Army is trying to develop a work measurement program but lacks the integrated systems design, the necessary top management support, and the procedural guidance necessary for an effective system.

The Army's control and placement of staffing standards organizations need improvement. The current organizational placements are either dependent on installation support or must rely on coordination to be successful. Staffing needs have not been determined or supported by Army headquarters.

CHAPTER 5

NEED RELIABLE LABOR

AND WORKLOAD DATA

The validity of manpower requirements depends on accurate information for sources of labor, the amount of time spent on the job, and the accuracy of workload counts. The Army has not consistently collected and used this information under the survey team approach. The impact cannot be quantified. However, inaccurate or incomplete information will directly and significantly affect products of work measurement.

REQUIREMENTS DO NOT IDENTIFY ALL LABOR SOURCES

The Army must identify all sources of labor performing the work before work center requirements can be used to justify planning and budgeting, allocation of staff, and appraisal of efficiency. Manpower survey team recommendations generally indicate that permanent garrison staff should do the work. But installations use up to nine sources of labor in addition to garrison staff to perform garrison work. These labor sources are managed by different programs and only part of the labor is justified for garrison work. Page 8 shows that congressional authorizations were about 80 percent of survey team recommendations in fiscal year 1978.

Installation commanders can, in accordance with Army policy and within other limits imposed by higher headquarters, determine how to staff the organization once the requirement is set. Fort Sill's allocations were 652 short of survey team recommendations at November 11, 1977. The 1974 survey team said Fort Sill needed to use 188 other personnel on a permanent basis. The installation commander can choose from numerous sources of labor to supplement the allocated staff. To cover the 652 shortage between survey team recommendations and allocations, the 188 other personnel recognized by the survey team, and locally determined missions, Fort Sill used 1,029 staff from the following labor sources. The data is as of November 11, 1977.

<u>Source of labor</u>	<u>Positions</u>
Overstrength TDA staff	360
Contract	344
Borrowed military manpower	168
Nonappropriated fund	66
Students	8
Volunteers	42
Command staff assigned to Fort Sill	13
Temporary	27
Active duty reservists	<u>1</u>
Total	<u><u>1,029</u></u>

The following sections discuss the four major labor sources and their related management.

Overstrength

Permanent garrison staff included 91 civilians whose spaces had been eliminated through reductions in force. The garrison work force also included 269 military personnel retained by the garrison to preclude borrowing deployable troops on a temporary basis. The Fort Sill Adjutant General told us that beginning May 31, 1978, overstrength military were transferred to deployable units and borrowed back. Overstrength military are now reflected as borrowed military manpower and subject to temporary restrictions. The number of civilian personnel will be reduced through attrition.

Contract labor

Fort Sill estimated that it was using 344 contract personnel to perform commercial- and industrial-type functions within the garrison. Actual staff-year equivalents are not known. Total manpower requirements cannot be evaluated for the garrison or compared to other installations because survey teams do not evaluate the workload of contract labor.

The procurement division at Fort Sill provided the manpower survey team a list of 813 contracts to use in reviewing contract labor. But the list did not include performance data nor express contracts in terms of staff equivalents and cost for accomplishing the work.

Installations must review their own contracts for commercial- and industrial-type functions at least once every 3 years to determine if that method of performance is least costly to the Government. At Fort Sill, the

Industrial Operations Directorate reviews contracts for recurring-type work and work center managers review nonrecurring contracts. But Fort Sill had reviewed only about 35 percent of the dollar value of commercial- and industrial-type function contracts for recurring work during the past 3 years.

Borrowed military manpower

Fort Sill work centers had borrowed 168 military personnel from deployable units as of November 11, 1977. Army Regulation 570-4 allows work centers to borrow military manpower from deployable units on a permanent basis when the need is recognized by the survey team. However, work centers can also get approval from the installation commander to borrow military manpower on a temporary basis to reduce the gap between permanently authorized personnel and survey team recommendations and for tasks of a nonrecurring nature.

In March 1978 the survey team recommended that Fort Sill continue to use 61 of the 168 deployable personnel on a permanent basis to work in the garrison. These personnel were to accomplish the same mission in the garrison they would perform if deployed. For example, the survey team recommended 31 of the 61 personnel be borrowed from the 30th finance section to work in the garrison finance and accounting division. The other 107 military were used to reduce the effect of the shortage in allocations or to perform locally authorized missions.

Fort Sill has established procedures for approving, reporting, and limiting the use of borrowed military manpower. The Director of Resource Management is responsible for approving the use of borrowed labor. The work measurement staff reviews the need for borrowed labor where work measurement studies are available. In addition to recommending the use of borrowed military to fill the gap between survey team recommendations and allocations, the staff may recommend the use of borrowed military manpower for some locally determined missions.

Our September 1978 report 1/ concluded that, while the Army acknowledges that borrowed military manpower is used to supplement TDA staff, it makes no allowance for this in its personnel utilization and reporting system.

1/"The Army Can Improve Peacetime Use of Deployable Enlisted Personnel" (FPCD-78-66, Sept. 7, 1978).

The report recommended that the Secretary of Defense, with the cooperation of the Secretary of the Army, (1) develop and issue policy guidelines that officially recognize the Army's need to use borrowed labor to perform garrison work and (2) develop plans and issue guidelines that will assist commanders in effectively utilizing borrowed labor.

The report emphasized the need for Army headquarters to provide policies that would facilitate control of the use of deployable military personnel. This vital need continues. Meticulous management of borrowed military manpower is particularly critical because these units would deploy at the same time the support workload at all installations would drastically increase in the event of mobilization. As previously shown, 269 military personnel retained as overstrength and 168 borrowed military manpower would be subject to deployment.

Nonappropriated fund labor

Installations can fund personnel from nonappropriated fund accounts to perform missions for which permanent garrison staff are not available. The manpower survey team does not consistently review and recognize this labor source when recommending staff. Fort Sill told the survey team it was using 66 nonappropriated fund employees to work with garrison staff in such activities as the sports and athletic division. Yet, the survey team did not recommend a need for either permanent garrison staff or other manpower. Moreover, the survey team encouraged commanders to convert additional spaces to nonappropriated funding. Local officials said, however, that the use of nonappropriated fund staff is restricted by the morale support fund which pays the salaries for this labor source. They said the fund is limited and no additional staff can be hired.

ARMY'S ESTIMATE OF WORKTIME IS INACCURATE AND MAY RESULT IN UNDERSTATED MANPOWER REQUIREMENTS

The Army estimates staff will be on duty 90 percent of the time and on annual and sick leave 10 percent of the time. However, leave often exceeds 10 percent which causes an understatement of manpower needs and efficiency. Absences for reasons such as training are not reflected in the factor. The Army uses work availability estimates in computing personnel requirements as follows:

$$\frac{\text{workhours required to produce workload}}{\text{available hours (90\% of workhours in month)}} = \text{number of workers}$$

The number of workhours is determined by multiplying the standard times the workload.

We reported 1/ in March 1978 that errors in estimating the amount of time civilian workers were available for work could have considerable effect on the number and cost of personnel. Specifically, we found that Federal agencies, including the Army, were not consistent in

- identifying the kinds of absences to consider in estimating staff availability,
- validating or adjusting their estimates annually,
- documenting and retaining their estimates as part of their justification for staff needs, and
- recognizing differences in availability by organization location or function.

The report pointed out that the Army based its estimate of available time on a 1952 study, that later reports showing increases in unavailable time were never implemented, and that Army requirements could be understated because the Army estimated all workers were available 90 percent of the time and thus did not recognize all the leave.

Overstating available time has little effect on the survey team's recommendations because few are based on a precise determination of the number of available man-hours needed to produce the output. The survey team based staffing requirements on an analysis of past production for only 3 of 30 work centers we reviewed at Fort Sill. The statistical analysis considers productive time and is the only method the survey team uses, which must be factored to add nonavailable time.

Staffing determinations and efficiency reports based on work measurement are, however, directly affected by the available time factor. Both Fort Sill and FORSCOM work

1/ "Estimates of Federal Employees Available Time for Work Distort Work Force Requirements" (FPCD-78-21, Mar. 6, 1978).

measurement groups use the 90-percent estimate of available time which can result in understated manpower requirements and efficiency.

Fort Sill computed staffing requirements for the Adjutant General's office for a 7-month period based on work measurement standards and the 90-percent availability estimate. On this basis the Adjutant General earned a monthly average of 396 spaces. However, 50 more spaces were used in that the average actual staffing was 446. The 50 excess spaces consisted of 30 due to inefficiencies and 20 because actual leave was 13.4 percent instead of 10 percent.

Fort Sill uses the requirements based on work measurement standards to evaluate the need for borrowed military manpower and to evaluate efficiency. Because Fort Sill uses a 10-percent leave estimate instead of actual, the work measurement staff recommended that the Adjutant General's office be reduced by 20 people who were on leave, and showed the office was 89-percent efficient rather than 93-percent efficient using actual leave. Fort Sill revised its reporting format to show excess on-duty (inefficiency) and off-duty (leave in excess of 10 percent).

FORSCOM work measurement staff also use a 10-percent leave estimate to determine requirements based on an average of 150 available hours each month. Using the same available hours for each of the 12 months can further distort the monthly staffing needs.

ARMY HAS NOT ESTABLISHED PROCEDURES
AND CONTROLS FOR THE COLLECTION
AND AUDIT OF WORKLOAD DATA

The Army has not established procedures and controls for collecting workload data, nor has it established a requirement to validate workload count. Moreover, we found that Fort Sill and FORSCOM do not have adequate controls for collecting and validating workload data to assure the credibility of staffing standards.

The sources of workload data for applying staffing standards should be clearly identified and defined and used consistently throughout the organization. Explicit documented procedures should be the basis for reviewing workload for accuracy before applying the standards. A work unit must be established in such a way that an accurate count of production can be made easily and economically.

Fort Sill's work measurement staff validates workload data when it establishes a standard but performs no subsequent validation. Although Fort Sill has issued detailed instructions for collecting and reporting information on workload, it does not provide safeguards for minimizing the possibility of duplicate or missed counts, nor does it have a requirement for periodically validating workload count. The staff relies on the integrity of work center managers to accurately report workload count. Fort Sill officials said that periodic validation of workload count is necessary but not feasible because there is an insufficient number of work measurement staff. One director told us that employees place a low priority on keeping workload counts for work measurement. He believes a validation effort is necessary.

FORSCOM attempts to select work units which can be easily identified and counted and are currently being recorded. No procedures and controls have been established to validate workload submission, although officials agree that such procedures are needed. FORSCOM plans to eventually use four regional teams to establish standards and trace reported workload to source documents. The potential problems that can result from failing to validate workload submission were in evidence during FORSCOM's test of its work measurement system at the transportation division of Fort Campbell, Kentucky. Work measurement analysts were instructed not to validate workload data unless it appeared to be suspicious. One work center reported more than twice the average monthly production, yet there was no increase in the number of man-hours used. The analysts reviewed this extreme case and found all sources of labor were not reported. FORSCOM staff have also found that installations define work units differently.

CONCLUSIONS

We believe the integrity of manpower requirements will be suspect under any method if the total sources of labor are not identified as garrison labor. The amount of work-time is inaccurate, and the workload accuracy is questionable. Until these data sources are properly identified and used, the manpower requirements based on staffing standards will have limited value for budget support or for evaluating efficiency.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The Army needs to change the way it estimates manpower requirements for garrisons so that the estimates will support budget requests and provide information needed in manpower management. The Army has reviewed its manpower survey team approach and has chosen to retain it supplemented with separate work measurement standards. Manpower surveys do not, however, provide the information the Army needs to submit budget requests, to allocate authorized staff, or to adequately monitor manpower utilization. With the current system, the Army cannot accurately predict its manpower needs for changes in workload required by the budget or by mobilization in a crisis.

Separate survey team and work measurement programs duplicate efforts, fragment manpower authority and responsibility, and provide information useful mostly at installation and command levels. But the information is not adequate even at these levels because

- the manpower requirements system does not directly relate manpower to workload and
- work center needs cannot be traced to the budget.

Even though work center requirements are not used to support budget requests, the garrisons have operated with about the same number of people the survey teams recommended. This has been possible because the Army commands allocate shortages between survey team recommendations and congressional authorizations to installations which can borrow deployable troops. Thus the Army does not identify total garrison costs in the budget. The Army cannot use manpower survey information to assess the impact of manpower shortages or identify work being done by borrowed labor.

Although the work measurement standards being developed by FORSCOM and Fort Sill may result in more accurate and supportable manpower information, they lack much needed information and will be of little benefit for top management budgeting. Furthermore, the consistency and reliability of the standards may be questionable and require gradual improvement over a period of time.

Many problems we identified in the Army's manpower management system relate to the Army's management philosophies. The Army headquarters provides policy guidance but permits commanders to exercise broad latitude in local organization. The Army believes this has the advantage of placing a great deal of authority at levels responsible for accomplishing missions.

We believe, however, such decentralized management contributes to a number of problems such as:

- Top level support, technical assistance, resources, and procedural guidance are not always provided.
- Organizational placement of work measurement programs is not controlled.
- Standards for organizational alignment and minimum staffing cannot be developed on a command-wide basis because every installation can perform similar activities differently.

The Army should assess the advantages of this management philosophy and decide the degree of flexibility compatible with its objective of deploying analytically based manpower standards usable by top level managers. Furthermore, the Army must recognize that decentralized management requires more overview and feedback than a centrally controlled organization.

RECOMMENDATIONS TO THE SECRETARY OF DEFENSE

We recommend that the Secretary of Defense identify the type of information the Army needs to prepare and support its manpower budget.

Army headquarters should use personnel experienced in budgeting, manpower, workload planning and control, data processing, and work measurement to design a manpower management system with the following characteristics.

- An organization structure that combines the manpower related responsibilities and staffing into one organization at all levels. The organization should centralize manpower control, eliminate duplication, and establish a manpower review function independent of those being reviewed. The staffing standards organization could be located at the commands for developing and updating standards but should be responsive to criteria and procedures directed by Army headquarters.

- A methodology for determining manpower needs based on work measurement where it is feasible and cost effective and uses onsite reviews only to review methods, procedures, and organizational efficiency in connection with the development and validation of staffing standards. The Army headquarters should provide procedural guidance on
 - when to use work measurement or other techniques to establish standards,
 - how to develop garrison-wide standards using similar work units and allowing only legitimate differences for such things as physical layout or mission,
 - when to conduct methods studies considering the need to define and standardize methods and procedures prior to setting standards,
 - how to summarize work center standards so that manpower requirements can be related to budget elements described in Army management structure codes and be estimated based on changes in programs, and
 - how to collect and validate information for
 - (a) total labor working in the garrison including costs, (b) available work time, and (c) workload.
- A management information system which uses a common data base for work center needs, garrison costs, budget requests, allocations, and evaluations of manpower use. The information system should integrate accounting, manpower reporting, and staffing standards information.
- A determination of the spaces needed to implement the system and an allocation of these manpower resources to the program.

PROBLEMS WITH STAFFING GUIDESAND MANPOWER SURVEY TEAM RECOMMENDATIONS

The following sections provide details on our analysis of the staffing guide and survey team recommendations for 30 randomly selected work centers at Fort Sill, Oklahoma, and our analysis of FORSCOM's update of the garrison staffing guide.

STAFFING GUIDES ARE NOT AUTHORITATIVE
ORGANIZATIONAL GUIDANCE

At Fort Sill, the survey team combined four of the work centers in our sample with other work centers before they could relate the organizational units to a staffing table. The survey team then recommended staffing as if the work centers were organized as described in the staffing guide. The division director over one of the work centers said he will retain the organizational alignments he had before the survey because he believes it is the best way to operate.

Fort Sill officials did not believe the applicable staffing tables described the activities for 12 of the 30 work centers we reviewed because the 12 centers performed more work than described in the tables. No staffing table or "work performed" statement existed for six work centers. The officials believed the staffing guide accurately described the activities of the other 12 work centers.

QUANTITATIVE NEEDS NOT RELATED
TO WORK PERFORMED STATEMENTS

FORSCOM staff who develop and update staffing tables use the FORSCOM organization and functions manual and FORSCOM survey reports to review and update statements which describe the work typically performed by work centers. The command level organization responsible for the work center identified in the table helps update the statement of work typically performed. The statements of work typically performed do not directly relate to the quantitative guidance. FORSCOM does not consider TRADOC work centers in updating the description of work but uses TRADOC work centers in updating quantitative guidance.

FORSCOM staff were updating the staffing table for wheeled vehicle repair in the maintenance division at the time of our review. They encountered a number of things which precluded them from updating the guide. First they

noted the work performed statement was no longer accurate because some FORSCOM survey reports show mechanics replacing parts instead of repairing the parts. Although FORSCOM's analysis of work performed indicated that the survey teams should be recommending less, the FORSCOM team had awarded more staff than shown in the yardsticks. The following was included in its analysis.

<u>Installation</u>	<u>Survey team recommendation</u>	<u>Yardstick allowance</u>
Fort Riley	13.7	4
Fort Lewis	10.4	5
Fort Stewart	8.0	5
Fort Bragg	33.0	30
Fort Ord	11.0	9

The staff could not determine why survey team recommendations exceeded yardstick allowances or associate staffing with the work performed statements. In further analysis, the staff found that the average time for jobs completed by work centers ranged from 13 to 56 hours. They tentatively proposed a yardstick based on an average of 14.7 man-hours per job.

STAFFING GUIDES DO NOT
USE MEANINGFUL WORK UNITS

In order to be meaningful, work units should have the following properties:

- The work unit should define a specific amount of work which can be converted into manpower.
- The work unit should be meaningfully related to manpower required to accomplish the work.

For the 30 work centers sampled at Fort Sill, the work unit defined a specific amount of work in only 5 cases, and only 3 of the 5 work units had a significant correlation to man-hours expended during the 12-month period preceding the manpower survey. The three work units with significant correlation were

- payments, collections, checks, and bonds processed;
- line items processed; and
- jobs completed.

Some work units are based on indirect factors which influence the number of personnel required to do the work but which do not relate to a specific amount of work. These work units, such as military population or square feet of buildings, do not generally vary in relation to the workload of a function. The yardsticks for 10 of the 30 work centers in our sample were based on work units with no meaningful relation at the work center level.

Some yardsticks provide staffing recommendations based on strength of the total activity. These guides are generally for administrative offices. Such yardsticks are referred to as staffing ratios and can only be based on historical practice and judgment. However, they may be the only technique available since there often is no measurable output for administrative functions. The technique has the disadvantage of accepting past relationships as being sound. Eight of the yardsticks in our sample were based on the size of the work center staff.

The garrison staffing guide provided no table or yardstick for the other seven work centers in our sample.

BASES FOR SURVEY TEAM RECOMMENDATIONS

A survey team used the following criteria for staffing recommendations at Fort Sill for the 30 work centers we randomly selected.

<u>Bases</u>	<u>Work centers</u>	<u>Recommended staff</u>
Yardstick	7	17
Yardstick adjusted for local factors	13	139
Past performance	3	19
Local appraisal	7	173
Work measurement standards	<u>0</u>	<u>0</u>
Total	<u>30</u>	<u>348</u>

Our analysis of recommendations for these 30 work centers showed none could be used to directly relate manpower to workload.

--The survey team based seven recommendations on yardstick allowances, but none of the yardsticks were based on work units which could be directly related to man-hours. For example, the survey team recommends

- 10 personnel for the safety branch based on the total post military, civilian, and contract population.
- The survey team adjusted the staffing allowed in the yardstick for 13 work centers to compensate for local differences in operations.
 - The survey team used analyses of past performance to recommend staff for three work centers but the analyses were not statistically valid.
 - The survey team made subjective appraisals of local conditions to recommend staff for seven work centers. For example, the survey team reviewed 1 work center's workload data for 40 different tasks without the benefit of any type standard.
 - The survey team did not use any of Fort Sill's work measurement standards even though 60 percent of the garrison is covered with standards and Army Regulation 570-4 requires survey teams to validate and use these standards.

PROBLEMS IN DEVELOPING
WORK MEASUREMENT STANDARDS

Army headquarters directed that commands develop work measurement standards, but it has not provided necessary procedural guidance on

- how to select the appropriate technique,
- how to relate work center requirements to program changes in the budget,
- how to develop standards to compare similar activities, and
- the extent methods studies should be conducted to improve or standardize operations prior to setting standards.

These problems are discussed in the following sections.

GUIDANCE NEEDED FOR SELECTING
APPROPRIATE TECHNIQUE

TRADOC installations and FORSCOM have selected various work measurement techniques for the same type of activities based only on local analysis of which technique is best or most cost effective.

FORSCOM is using the statistical technique so that all activities in FORSCOM garrisons can be quickly covered. Thus FORSCOM has made no cost-benefit analysis for selecting techniques. Total coverage, according to the officials, is necessary so that management decisions can be made on common data bases. FORSCOM, however, estimates it will take 4 to 5 years to cover all FORSCOM garrisons with nonengineered statistical standards. Then they hope to use engineered standards and refine the standards where applicable.

Fort Sill work measurement staff do not know if the study techniques they choose are the best or most cost effective. Fort Sill had studied 60 percent of the positions in the garrison between 1974 and March 1978. Fort Sill staff prefer to use work samples because the technique produces more accurate standards than other techniques, but

the technique takes from 1 week to several months for each work center and may not be economical. The following chart shows the techniques used by Fort Sill.

<u>Study technique</u>	<u>Positions</u>	<u>Percent of positions studied</u>
Work sample	1,051	54.1
Statistical analysis	80	4.1
Operational audit	795	40.9
Operational audit backed by work sample	<u>18</u>	<u>.9</u>
Total	<u>1,944</u>	<u>100.0</u>

Fort Sill work measurement staff make operational audits which are similar to judgmental evaluations by survey teams. The analysis may not include any measurement of workload in relation to man-hours, and could otherwise be described as a technical estimate. Fort Sill used the operational audit for many functions where a work unit could not be identified. To supplement the operational audit, Fort Sill sometimes conducts a work sample to identify nonproductive time.

Fort Sill officials said there is a need for increased direction and coordination in the work measurement program. To demonstrate the need, they obtained information to show how four installations used different techniques to study the same type of work centers. The installations used a common technique at only 7 of 20 work centers studied, and used 2 or more different techniques at the remaining 13 work centers.

We also compared the study technique selected by Fort Sill and FORSCOM for 13 work centers in the transportation division. Fort Sill used engineered work samples six times, nonengineered operational audits two times, and a combination of engineered and nonengineered studies five times. FORSCOM used nonengineered statistical standards for all 13 work centers.

SUSCEPTIBILITY OF STANDARDS TO SUMMARIZATION

FORSCOM and Fort Sill have not summarized their staffing standards to relate to programs identifiable in the budget. As a result, work centers will have to estimate workload to predict personnel needs. Summary level standards would allow a higher organizational level to predict

manpower needs based on projected changes in the size of the Army or identified program elements.

The success of developing summary level standards is highly dependent on top management participation. To summarize detailed standards, there must be

- a correlation of the output (work unit) to the input (man-hours) for detailed work center standards,
- a capability to summarize the standards at the work center level into standards at successively higher levels commensurate with budget elements, and
- a capability to predict the summary level work unit for future years.

There are at least two methods of developing summary level standards. First, the hierarchy of work units method can be used when there is a product or measurable output at a high level in the organization and lower level work units are components of the summary level work unit. Secondly, the Air Force uses a program-estimating equation to summarize numerous unrelated work units and to relate the units to a program factor which can be predicted.

Hierarchy of work units

Current system

The hierarchy of work unit concept begins with the total activity and, in an orderly manner, breaks down the activity's responsibilities into successively smaller functional areas and associated work units. The succeeding lower level work units can then be related to a work unit at the next higher level in the same way they were broken down. To be sure work units relate to the budget and can be summarized, the hierarchy must be developed from the top down.

Flaws in current system

Both Fort Sill and FORSCOM select the work units at the work center level, where measurement will be made, rather than from the top down. Fort Sill has not attempted to develop higher level standards. FORSCOM has attempted to develop summary level standards but could not find a work unit or product at a higher level made up of the lower level work units. The inability to find a product at the

summary level is typical for service-type functions performed at garrisons. It is more typical of a manufacturing or repair organization.

FORSCOM recognized the need to develop summary level standards when it designed a systems approach to develop work measurement standards. Moreover, it recognized that detailed standards cannot be used by budget or manpower personnel. But FORSCOM staff were unable to follow through with their plan.

FORSCOM attempted to summarize unlike work units, but it could find no common output or product. Therefore, FORSCOM tried to arbitrarily designate the man-hours needed at the work center as the product at the summary level. FORSCOM developed an invalid standard at the summary level based on earned hours. The standard did not identify workload, could not be used in projections, and resulted in offsetting any inefficiencies found at the work centers.

FORSCOM has now revised its reporting system and will add the earned hours to successively higher organizational levels. The report will also compare the number of staff on board to the number of staff earned which shows performance efficiency. With this system, FORSCOM can aggregate earned hours and compute efficiency at each organizational level and determine if staffing levels need to be adjusted based on past production. Any projections of workload and staff requirements will, however, have to be made by the work centers because there is no product or workload identified at the summary level.

Program-estimating equations

The Air Force recognizes that manpower requirements must be based on projected workload volumes which can be related to programs identifiable in the budget. The Air Force prescribes two methods to determine future manpower requirements. In some cases the Air Force can summarize the standards to a work unit for which the anticipated workload can be found in programing documents. For these the Air Force can determine future manpower requirements by a direct application of programed workload to the standard.

In other cases workload volumes are not identifiable at the budget level. Therefore, the Air Force uses a method referred to as program-estimating equations to tie manpower

requirements at work center level to a program variable such as base population or flying hours. In summary, the Air Force

- determines the requirements for work centers which perform a common function based on work measurement standards and historical workload (e.g., the sales store, administration, and warehouse make up the commissary);
- compares these work center or function requirements for all installations to several program variables in the budget using regression analysis and selects the program variable which has the best correlation; and
- estimates total requirements for the function based on forecasted data for the program variable.

The Air Force allocates approved staff by prorating authorizations to the installations based on the work center requirements.

TRADOC officials recognized that there is a need for managers to relate the many and diverse operation and maintenance functions to common measures of workload. In order to determine resource to workload relationships, TRADOC has developed cost-estimating relationships and manpower-estimating relationships which permit quick resource estimating at program element and activity level based on projected workloads. The development of the relationships is based on multiyear historical cost charges to the Army management structure codes. This technique of estimating appears similar to the Air Force's program-estimating equations. TRADOC's reliance on historical costs rather than summary level standards will, however, perpetuate any inefficiencies in operations and historical staffing patterns.

GARRISON-WIDE STANDARDS WILL NOT BE DEVELOPED

The Army's approaches to developing work measurement standards will provide installation management a tool to evaluate efficiency but commands will not be able to compare installations.

The Army's approaches will result in a different standard for the same type of function at every garrison. TRADOC has allowed each installation to develop its own standards

based on local initiatives. FORSCOM has a centralized program, but officials believe the uniqueness of each installation must be recognized through separate standards for each installation. Neither TRADOC nor FORSCOM will be able to identify the reasons for differences in standards. Thus the standards will include staffing for organizational differences, local missions, and inefficiencies without explanations of the differences.

Command-wide or garrison-wide standards are necessary before work centers can be staffed in the most effective and efficient manner and the operations of similar functions compared. This is not to say that legitimate differences should not be recognized when they relate to such things as approved missions and physical layout. Fort Sill officials recognize the need for command-wide standards, but say they can do nothing as long as the program is directed at the installation level.

FORSCOM, on the other hand, has established procedures to develop FORSCOM-wide standards for each garrison work center. The command standards will be an average of all similar work center standards, but there will be a factor which will allow for differences in organization, equipment, physical layout, methods of operation, and even inefficiencies for each installation staffing.

When FORSCOM distributes staff to the installation based on these standards, it plans to use the command standard plus the installation's unique adjustment factor. FORSCOM cannot explain what differences are reflected in the adjustment factor. For example, they do not know how much is due to inefficiencies, local missions, or legitimate differences such as physical layout. The adjustment factor may, however, quantify the differences in installations and alert management that there are differences. FORSCOM hopes to define the differences over a period of time and put pressure on installations to reduce staffing for illegitimate differences.

To use standards to compare installations, work units should have the same meaning throughout the organization. Then all organizational elements will be able to use a standard based on this work unit for planning, scheduling, efficiency evaluation, and manpower determination. However, TRADOC generally cannot compare its installations' standards because they have selected different work units for similar work centers.

Information on 20 types of work centers from 4 TRADOC installations shows that standards being developed at different installations are not compatible. Installations that had made studies selected common work units for 5 types of work centers and different work units for 12 types of work centers. Only one installation had studied three types of work centers.

METHODS STUDIES ARE NEEDED

Army Regulation 5-4 requires that methods studies be conducted prior to development of detailed standards. Inefficiencies and differences in operations can be identified through a methods study performed by the work measurement staff. The Fort Sill staff generally performs methods studies, but FORSCOM officials said it will not perform methods studies until all garrison activities are covered by statistical standards.

Methods studies are the systematic analysis of existing and proposed ways of doing work and the development of easier and more effective means. There usually are many ways to do a task, but the best way is not always obvious or in use by the work center staff. Methods studies can be conducted prior to work measurement to

- improve the design of the process and procedures currently in use,
- obtain better economy in the expenditure of resources and a general increase in productivity,
- develop better working conditions, and
- standardize methods prior to establishing standards.

The Fort Sill chief of work measurement said that methods studies can provide the detailed descriptions of processes, organizations, and equipment needed to compare standards. However, guidelines are needed so that the results of methods studies will be adequately described. Fort Sill's work measurement analysts must decide how much time to devote to the methods study and what procedures to use.

FORSCOM conducted methods studies during its test of work measurement but decided not to continue the studies until all garrison functions are covered by statistical standards. As a result, FORSCOM staff are not sure the data collected has been consistent between installations,

work units always represent the same work, all labor input to the work center has been identified, and the work center process are the same.

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